UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,416	03/23/2004	Mitsuaki Hirokawa	Q80574	2263

65565   7590   09/10/2009
SUGHRUE-265550
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EXAMINER
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ART UNIT	PAPER NUMBER
1797	

MAIL DATE	DELIVERY MODE
09/10/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

1   RECORD OF ORAL HEARING
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3   UNITED STATES PATENT AND TRADEMARK OFFICE
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6   BEFORE THE BOARD OF PATENT APPEALS
7   AND INTERFERENCES
8   _____
9
10   Ex parte MITSUAKI HIROKAWA, MASAAKI ANDO,
11   SHINICHI CHIKURA, and SATORU ISHIHARA
12   _____
13
14   Appeal 2009-005444
15   Application 10/806,416
16   _____
17
18   Oral Hearing Held: August 11, 2009
19   _____
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21
22   Before JAMES T. MOORE, Vice-Chief Administrative Patent Judge,
23   TERRY J. OWENS, and PETER F. KRATZ, Administrative Patent Judges.
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27   ON BEHALF OF THE APPELLANTS:
28
29   YAN LAN, PATENT AGENT
30   Sughrue Mion, PLLC
31   2100 Pennsylvania Avenue, NW
32   Washington, DC 20037-3213
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1   The above-entitled matter came on for hearing on Tuesday,

2   August 11, 2009, commencing at 1:20 p.m., at the U.S. Patent and

3   Trademark Office, 600 Dulany Street, 9th Floor, Hearing Room A,

4   Alexandria, Virginia, before Laurel P. Platt, Registered Diplomate Reporter,

5   Notary Public.

6   USHER ON DUTY: Calendar number 33, appeal number

7   2009-5444, Ms. Lan.

8   MS. LAN: Good afternoon.

9   JUDGE MOORE: Good afternoon. Welcome. I assume you're

10 coming in from the Washington office?

11   MS. LAN: That's right.

12   JUDGE MOORE: Well, you didn't have far to travel. We are

13 pleased to see you here. You may assume we are familiar with the record,

14 and you have 20 minutes to spend as you see fit. We look forward to your

15 argument.

16   MR. LAN: Good afternoon. My name is Yan Lan. I am here

17 to represent the Assignee's appeal. The subject matter on today's appeal

18 relates to a spiral separation membrane element that is effective in

19 membrane separation conducted under low pressure.

20   For purpose of today's hearing, I would like to focus on the

21 obviousness rejection of independent claim 1.

22   The Examiner in this case has rejected claim 1 over two

23 references: Cruz '528. That is WO 02/051528. And the second reference is

24 Schmidt, which is U.S. Patent 6,352,641.

1   The Examiner's position is that claim 1 is obvious in view of

2 those two references either individually or in combination. However,

3 Appellant disagrees with Examiner for a couple of reasons as to why the

4 cited references, either alone or in combination, would not render the claim

5 obvious.

6   First, claim 1 recites a spiral separation membrane element that

7 has a particular layered structure.

8   Also, claim 1 recites a particular parameter of an effective

9 perforated-part area which is calculated by a special way by multiplying the

10 total area of the perforations in the perforated core tube by the percentage of

11 openings in one layer of the second permeation-side passage material,

12 wherein this particular effective perforated-part is at least one times the inner

13 cross-sectional area of the core tube. This is a particular characteristic of the

14 current invention now we do not believe the cited references teach.

15   In this case there is no dispute. The Examiner already conceded

16 in his Final Office Action that the cited references do not disclose or teach

17 this particular limitation.

18   However, the Examiner takes the position that this particular

19 effective perforated-part area is a result-effective variable, which then can be

20 optimized.

21   To support his position, the Examiner cites a third reference

22 which is Haq -- that is U.S. Patent 6,702,941 -- as evidence that the effective

23 perforated-part area is a result effective variable.

24   We dispute the Examiner's position in appeal.

1   And also, the rejection phase of routine optimization of the

2 cited references is improper for at least the following two reasons.

3   First, it is the Appellant's position that in order to make it

4 possible to have been obvious to optimize an alleged result-effective

5 variable, the variable must be identified in the prior art. And that is certainly

6 not the case here.

7   And secondly, the Examiner's conclusion that the cited

8 reference of Haq is evidence that the effective perforated area is a result-

9 effective variable, it's improper. There is no such base to support his belief.

10   Because in particular, the Examiner cites a paragraph which is

11 in column 26, line 47 to 51 of Haq. However, these cited pages of Haq

12 merely disclose that the total area of perforation is at least as large as the

13 cross-sectional area of the opening. And clearly, this is not a disclosure that

14 the effective perforated area is calculated by the weight that is claimed in the

15 present claims.

16   So with that, it is the Appellant's position that Examiner's cited

17 passage of Haq is not a disclosure and cannot support his conclusion.

18   With that, Appellant respectfully submits that the Examiner's

19 rejection is improper and should be reversed.

20   That's all I have for today, and I am ready for questions.

21   JUDGE OWENS: If you want to get a particular rate of flow

22 through your core tube, do you need the cross-sectional area of the holes that

23 are at least equal to the cross-sectional area of the core tube?

24   MS. LAN: That may be, but however, that is not what the

25 current invention is trying to claim.

4

1   JUDGE OWENS: Suppose the cross-sectional area of the holes

2   is equal to the cross-sectional area of the tube, and then you wrap a

3   membrane around it, and that takes up space. It reduces the cross-sectional

4   area available to flow into the tube. Wouldn't that then mean that you need

5   more cross-sectional area to compensate for that blockage caused by the

6   membrane?

7   MS. LAN: May I ask is your question actually related to the

8   particular way how the effective perforated area is calculated?

9   JUDGE OWENS: It's related to that because if the cross-

10   sectional area of the holes is only equal to the cross-sectional area of the

11   tube, and you block some of those holes with the membrane you wrap

12   around it, then you'll get a flow restriction. You won't get enough flow

13   through the tube. So therefore you need more cross-sectional area of the

14   holes to compensate for that.

15   MS. LAN: If I may direct Your Honor's attention to example 1

16   and comparative example 1 of the current specification, that's where we

17   clearly define how the effective perforation area is calculated.

18   And when you ask -- I believe I would have to consult with the

19   clients to confirm that.

20   JUDGE OWENS: Okay. Well, let's use a different approach.

21   Suppose we go to your spec. at page 2, line 2.

22   MS. LAN: Okay. I am with you.

23   JUDGE OWENS: And it says it has been thought that the

24   appropriate range of total perforated-part area is about 2 to 4 times the cross-

25   sectional area of the core tube.

1   Now, suppose it's 2 times, and you block half of that with your

2   membrane that you're wrapping around it. Then the effective area of the

3   holes will be equal to the cross-sectional area of the tube.

4   MS. LAN: Okay.

5   JUDGE OWENS: Then you will get the desired flow through

6   the holes that you want through the tube. If you block it any more than that,

7   you won't get the desired flow. So therefore, 2 wouldn't be enough. You

8   would have to go up to something else, like 4.

9   It says in the next paragraph that the percentage of openings in

10   one layer of the permeation side passive material is as low as about 20

11   percent.

12   So if it's 20 percent, and you use a factor of 2, that's not enough.

13   That will give you less than your cross-sectional area of the tube. So you

14   won't be getting enough flow through the membrane and the holes to get the

15   amount you want flowing into the tube.

16   So it appears that in order to get the flow through the tube that

17   you want, you have to have a combination of cross-sectional area of the

18   holes and openings in the membrane to permit that flow. So it has to be at

19   least 1, which is what your claim recites.

20   MS. LAN: That's correct. Yes.

21   JUDGE OWENS: It doesn't seem like you can get the flow into

22   the tube that you want without doing what you are reciting in your claim.

23   MS. LAN: However, the claim requires that the effective

24   perforation area is calculated by -- actually, the relationship of the opening

1   with the -- relationship of the perforation of core and opening, and that is a --

2   and the relationship of those two areas is what we're going to claim.

3   JUDGE OWENS: Okay. So if you go to your spec. at page 2

4   again, and the percentage of openings in your permeation side material is

5   only 20 percent, then if you multiply that 20 percent by either the 2 or the 4

6   times in page 2, line 3, it's less than 1.

7   So you're not getting the amount of flow you need into the tube.

8   .2 times 4 is only .8. It's not 1. So you need to increase the 20 percent to

9   something else. Like in your spec., it says at page 8 in the middle, the

10   percentage of opening preferably is 30 to 40 percent.

11   MS. LAN: That's right.

12   JUDGE OWENS: So if you multiply 30 to 40 percent times

13   those 2 to 4 numbers, then you get at least 1. So you're getting as much flow

14   into your tube as you need.

15   MS. LAN: So the question is the way the claim is constructed?

16   JUDGE OWENS: The question is if you're going to get the

17   amount of flow you want through the tube, don't you necessarily have to use

18   a combination of cross-sectional area of the holes and open area of the

19   membrane that gives you that amount of flow?

20   MS. LAN: I believe, yes.

21   JUDGE OWENS: And if the cross-sectional area of the holes

22   is 2 to 4 times the cross-sectional area of the tube, don't you need an amount

23   of open area in your membrane which, when multiplied by that, gives you at

24   least 1 times the cross-sectional area of the tube? Otherwise, you don't get

25   as much flow into the tube as you want. You can't.

1   MS. LAN: I think I am probably missing something from here,

2 but what was just asked here is not what was in the rejection, and that's not

3 what was taught by prior art.

4   JUDGE OWENS: Your argument was that it wouldn't have

5 been suggested by the prior art. And my question is why wouldn't it have

6 been suggested if that's what you need to get the amount of flow through the

7 tube that you want? You can't get it any other way.

8   MS. LAN: Whether we may get it any other way, maybe or

9 maybe

10   not. That may be something we would have to confirm with the

11 Applicant.

12   JUDGE MOORE: Let me ask the question a different way.

13 Let's assume -- here is a stretch -- that I'm a person of ordinary skill in the

14 art, and I want to adjust the flow in my tube. To change the diameter would

15 be one way of affecting the flow. You narrow it down; you restrict the flow.

16 You open it up; you increase the flow.

17   MS. LAN: Probably.

18   JUDGE MOORE: Another way is the perforations along the

19 side of the tube. If I have more perforations of bigger size, then I can get

20 more flow through those. And fewer and smaller, and there would be less

21 going through the tube. And one of ordinary skill in the art would know to

22 adjust those for flow reasons.

23   MS. LAN: However, that was not taught by any of the cited

24 references.

1   JUDGE MOORE: Right, but a person of ordinary skill in the

2   art has a certain knowledge that's imputed to them. They don't look at the

3   references in a void or a vacuum. They have a certain working knowledge

4   of how things are.

5   MS. LAN: However, what we relate to that is the third

6   reference, the Haq, which the Examiner cited to support his position.

7   However, if we can look at it the way the Haq was regarding

8   the relationship between the diameter of the core tube and the opening is not

9   the way we are citing in our present claim. And that is my position, meaning

10   one of ordinary skill in the art might not necessarily consider as

11   we suggested.

12   JUDGE MOORE: We understand your argument. Thank you

13   very much for coming, and we appreciate it.

14   Whereupon, at 1:35 p.m. the proceedings were concluded.